SEMESTER EXAMINATION DECEMBER-2023

Course Name: - B.Tech **Semester:- 1st**

Paper Name: - Energy Science & Engineering **Paper Code:- TMC-102**

Time - 3 Hrs + 20 minutes per hour extra time for V.I. & examinees with writer. **Max Marks-70**

समय–3 घण्टे+ 20 मिनट प्रति घंटे अतिरिक्त–दृष्टिबाधित एवं राइटर लेखक परीक्षार्थियों के लिए। अधिकतम अंक–70

Instructions:

- The question paper consists of three sections namely A, B, C. All sections are compulsory.
- Section A- Each question carries **3 mark. All questions are compulsory.**
- Section B- Answer any **5 out of 7** given questions in maximum one hundred fifty (150) words. Each question carries **7 marks.**
- SectionC- Answer any **2 out of 3** given questions in maximum three hundred (300) words. Each question carries **10 marks.**

निर्देश:

- प्रश्न पत्र में तीन खण्ड अ, ब, व स हैं। सभी खण्ड अनिवार्य हैं।
- खण्ड–अ में प्रत्येक प्रश्न तीन अंक का है। **सभी प्रश्न अनिवार्य हैं।**
- खण्ड–ब में सात प्रश्नों में से किन्हीं पाँच प्रश्नों के उत्तर अधिकतम 150 शब्दों में दें। प्रत्येक प्रश्न सात अंक का है।
- खण्ड–स में तीन प्रश्नों में से किन्हीं दो प्रश्नों के उत्तर अधिकतम (250-300) शब्दों में दें। प्रत्येक प्रश्न **10** अंक का है

Section – A (खण्ड–अ)

Objective Questions(वस्तुनिष्ठ प्रश्न)

1. Answer allthe following questions. 5x3 =15

निम्नलिखित सभी प्रश्न अनिवार्य हैं।

i) In ocean energy which of the following chemical/component act as fluid?
   a) Ammonia
   b) Mercury
   c) Water
   d) Propane

ii) What is Carbon sequestration?
   a) The process of converting carbon dioxide into oxygen
   b) The process of releasing carbon dioxide
   c) The process of capturing and storing carbon dioxide
   d) The process of using carbon dioxide to produce energy

iii) The less insolation occurs when the sun is _____
   a) At night
   b) Low in the sky
   c) High in the sky
   d) None of the above

iv) Which type of solar cell gives the highest efficiency?
   a) Monocrystalline
   b) Polycrystalline germanium
   c) Thin film
   d) Amorphous

v) Light water reactors (LWR) are nuclear reactors
   a) Which use heavy water as a coolant
   b) Which use graphite rod as moderator.
   c) Which use steam as moderator.
   d) Which use ordinary water as moderator

Section – B (खण्ड–ब)
Short Answer Questions (लघुउत्तरीय प्रश्न)

2. Answer any five of the following questions in maximum150 words. **5x7=35**
निम्नलिखित में से किन्ही पाँच प्रश्नों के उत्तर अधिकतम 150 शब्दों में दें।

i. What is the current Energy scenario in India? Explain in Brief.

ii. Explain the different biomass conversion process.

iii. What do you understand by the Carbon credit and Carbon reduction emission(CER) certificate?

iv. Give general layout and working of Francis, Kaplan and Pelton types of turbines.

v. Outline the working principle of the tidal power plant. Discuss their advantages and limitations.

vi. Calculate Local Apparent time corresponding to 16:00 hours Indian standard time on 10th June, a location Ahmedabad (72.5714 E longitude). Also calculate the hour angle for the same. Take EOT=1.15 and Standard time longitude for IST is 82.5° E.

vii. What do you understand by LEED certification in green building concept?

Section – C (खण्ड–स)
Descriptive Questions (विवरणात्मक प्रश्न)

3. Answer any two of the following question in maximum 300 words. **2x10=20**
निम्नलिखित में से किन्हीं दो प्रश्नों के उत्तर अधिकतम 300 शब्दों में दें।

i) Explain the advantages and disadvantage of the Surface mines and underground mines.

ii) Illustrate the concept of nuclear fission. Explain PWR and fast neutron type of fission reactor.

iii) What are the concepts behind the construction of a Green building?

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